**231/3**

**BIOLOGY**

**PAPER 3 (PRACTICAL)**

**FORM THREE**

**END OF TERM I YEAR 2022**

**INSTRUCTIONS TO CANDIDATES:**

1. You are provided with food substance labeled solution G. The reagent provided are Iodine

 solution, Benedicts solution, 2M HCl acid, 10% Sodium hydroxide solution Copper (II) sulphate

 and 10-% Sodium hydroxide solution.

 (a) Perform food tests and fill in the table below. (12 mks)

|  |  |  |  |
| --- | --- | --- | --- |
| **Food substance** | **Procedure** | **Observation** | **Conclusion** |
| Starch | To absorb 2cm3 of G, add a few drops of iodine solution | No color change/brown color of iodine remains | Starch absent |
| Reducing sugar | To about 2c3 of solution G, add 2cm3 of benedicts solution and heat (to boil) | No colour change blue colour remains | Reducing sugar absent |
| Non-Reducing sugar | To about 2cm3 of solution G add 1cm3 if 2m HCl and boil. Cool and NaHCO3 dropwise until fizzing stops add 1cm3 of Benedicts solution and heat | Colour changes to orange/orange precipitate formed | No reducing surgar present |
| Proteins | To about 2cm3 of solution G, add 5 drops of 10% NaOH and shake. Then add 0.5% of copper (II) sulplhate solution drop by dropl while shaking. | Mixture turns purple | Protein present |

 (b) (i) Name the enzyme responsible for digestion of food substance present in G in two named

 regions of the human alimentary canal. (2 mks)

 (i) - In the stomach – enzyme pepsin

 - In the duodenum – enzyme trypsin

 (ii) Name three deficiency diseases in children that may result from lack of one of the food

 substances in G. (1 mk)

 Kwashiorkor

2. (a) A – Renal vein. B – Ureter. C – Kidney pelvis. D – Cortex.

(b) - Has numerous mitochondria to provide energy for active transport. - Has microvilli in the inner

 lining to increase surface area for reabsorption of substances. - Highly vascularised for transport of reabsorbed substances. - Has a thin epithelium for rapid diffusion of substances.

 (c) On the diagram to show loop of henle.

(d) - Osmoregulation. - Regulation of pH.

(e) The distal convoluted tubules and collecting duct will be less permeable to water; therefore less

 reabsorption of water, leading to production of large volume of urine; that is dilute

3. i) Class insecta; *rej insects*

ii) Presence of one pair of antennae

Three body parts; head, thorax and abdomen; *rej. if parts are not named*

Three pairs of walking legs;

One pair of compound eyes; *(Acc. any three)* b) Some are pollinators

- Some can be used as food e.g. termites - Some produce edible substances e.g. honey

 - Some destroy buildings

 - Some are disease vectors

 - Some acts as pests and parasites Any 3 max 3mks

c) 1 a) Insects with wings ............................. go 2;

 b) Insects without wings ............................. Termite/ant;

2 a) With proboscis..................................... Butterfly

b) With mandibles ................................. Cockroach